(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization

International Bureau



553579 

(43) International Publication Date 28 October 2004 (28.10.2004)

**PCT** 

## (10) International Publication Number WO 2004/092606 A2

(51) International Patent Classification7:

F16D 65/00

(21) International Application Number:

PCT/CA2004/000590

(22) International Filing Date:

19 April 2004 (19.04.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/463,339

17 April 2003 (17.04.2003) US

(71) Applicant (for all designated States except US): VIC-THOM HUMAN BIONICS INC. [CA/CA]; 4780, rue Saint-Félix, Bureau 105, Saint-Augustin-de-Desmaures, Québec G3A 2J9 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): DUPUIS, Daniel [CA/CA]; 188, rue du Cap, Neuville, Québec G0A 2R0 (CA). BÉDARD, Stéphane [CA/CA]; 256, rue du Tonnelier, Saint-Augustin-de-Desmaures, Québec G3A 2K5 (CA). ROY, Pierre-Olivier [CA/CA]; 1242, rue Allard, Sainte-Foy, Québec G1W 3G1 (CA).

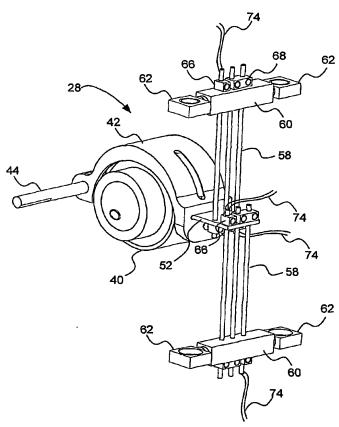
(74) Agents: BRITT, Katherine et al.; McCarthy Tétrault LLP, Le Winsdor, 1170 Peel Street, Montreal, Québec H3B 6246 (CA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM. TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: HIGH POWER/WEIGHT RATIO BRAKING DEVICE BASED ON SHAPE MEMORY MATERIAL TECHNOLOGY



(57) Abstract: The braking device is provided a set of shape memory alloy activators positioned, in an agonistic-antagonistic configuration on each side of a brake lever. Braking and releasing phases are dictated by the austenitic transformation of the shape memory alloy activators. During brake activation, shrinking of the braking activator brings the friction pad in contact with a rotating drum creating a braking friction torque. Once the brake has been activated, deformation of a flexible fiberglass component prevents brake releasing by applying sufficient normal force between the drum and the friction pad. Conversely, upon heating of the releasing activator, the pad looses its grip and the drum is free to rotate.



GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.